

## Supporting Information

### Ligand Migration and Binding in the Dimeric Hemoglobin of *Scapharca inaequalvis*

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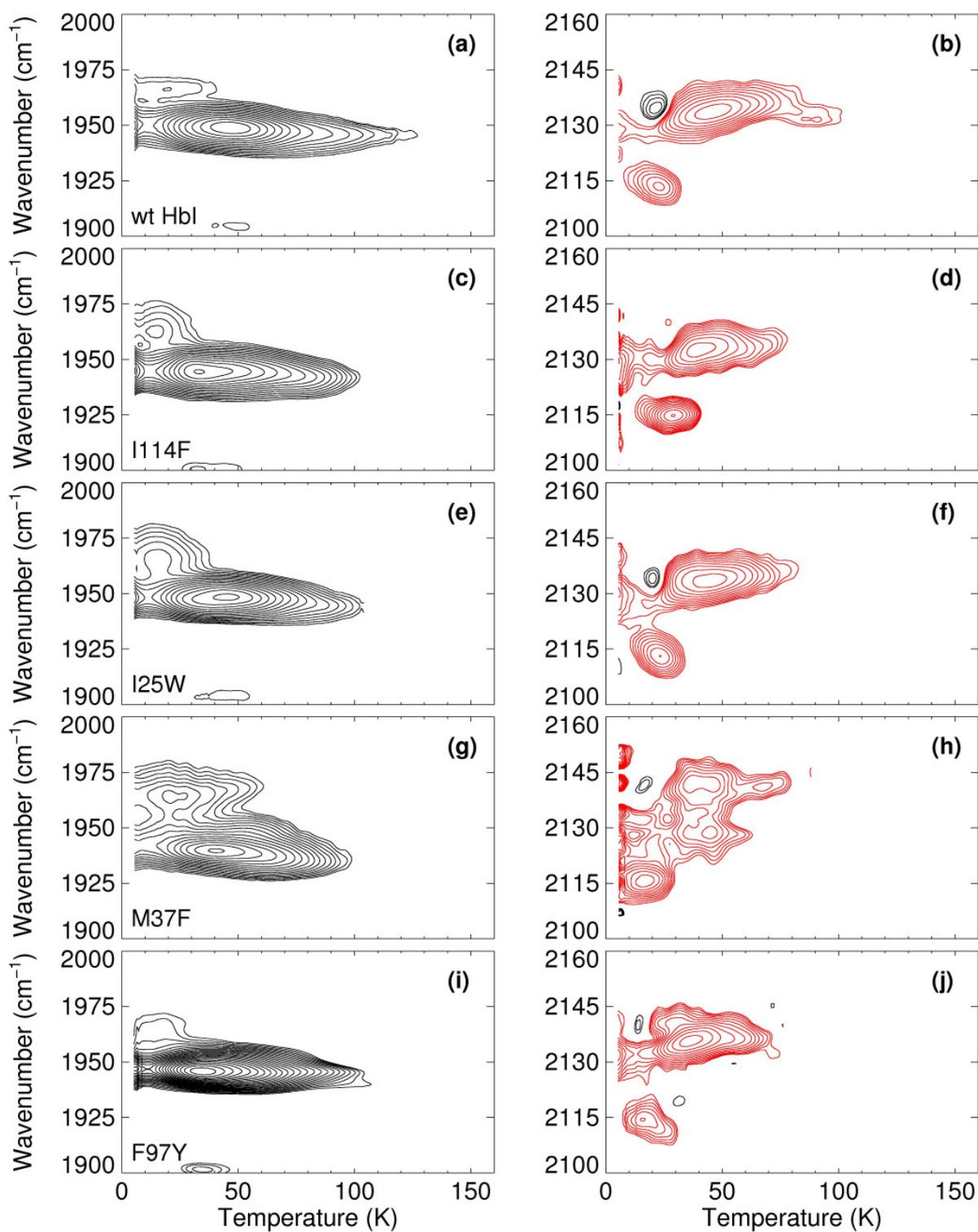
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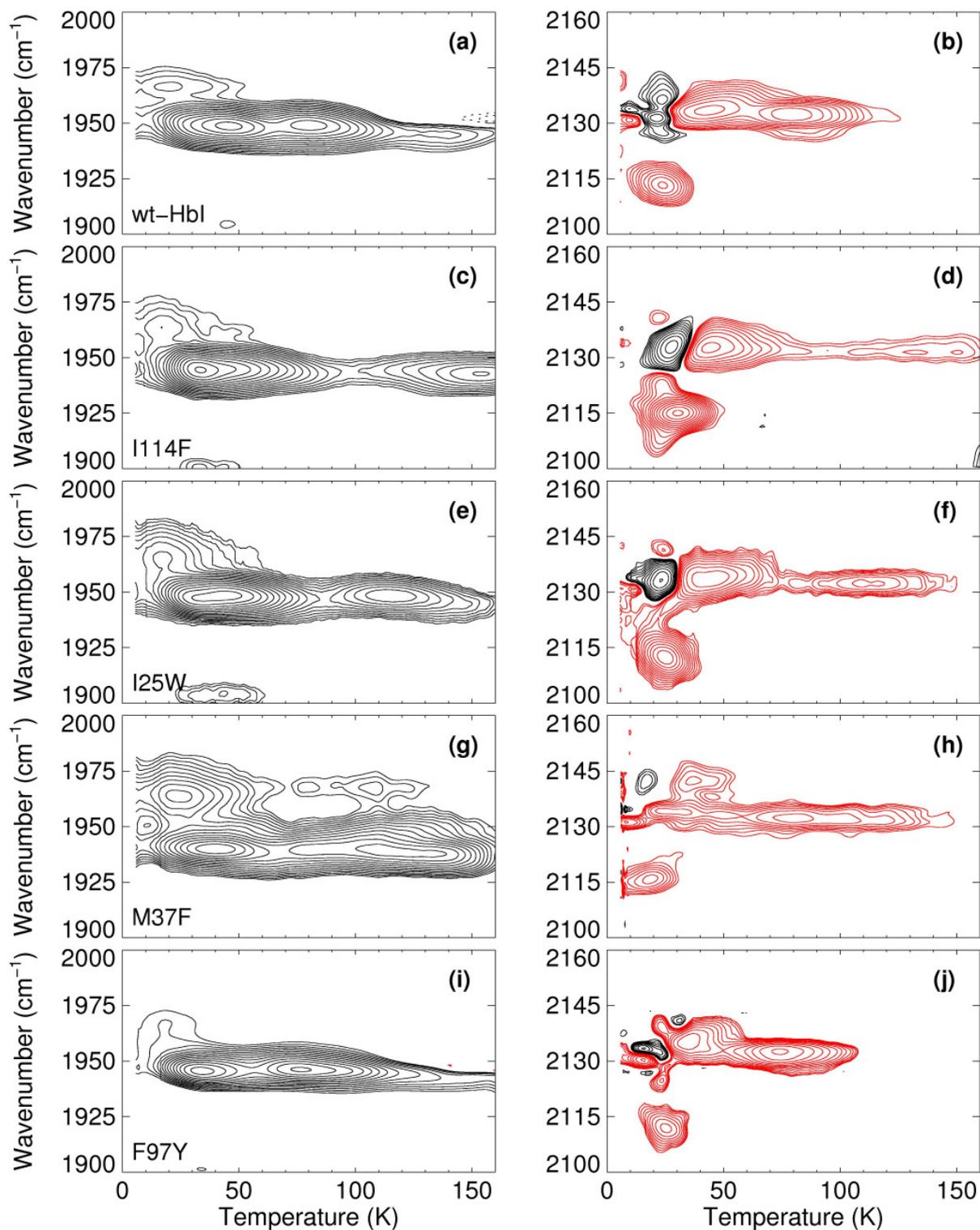
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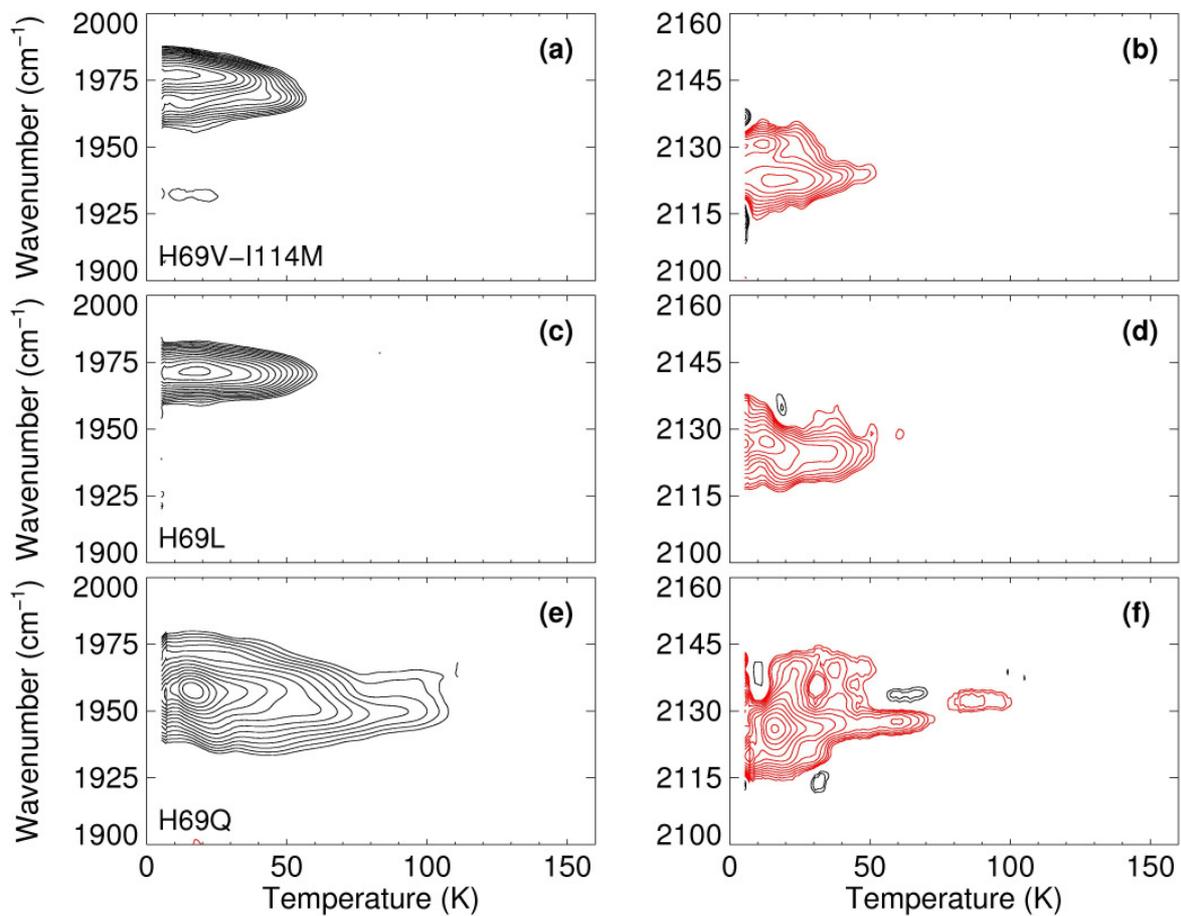
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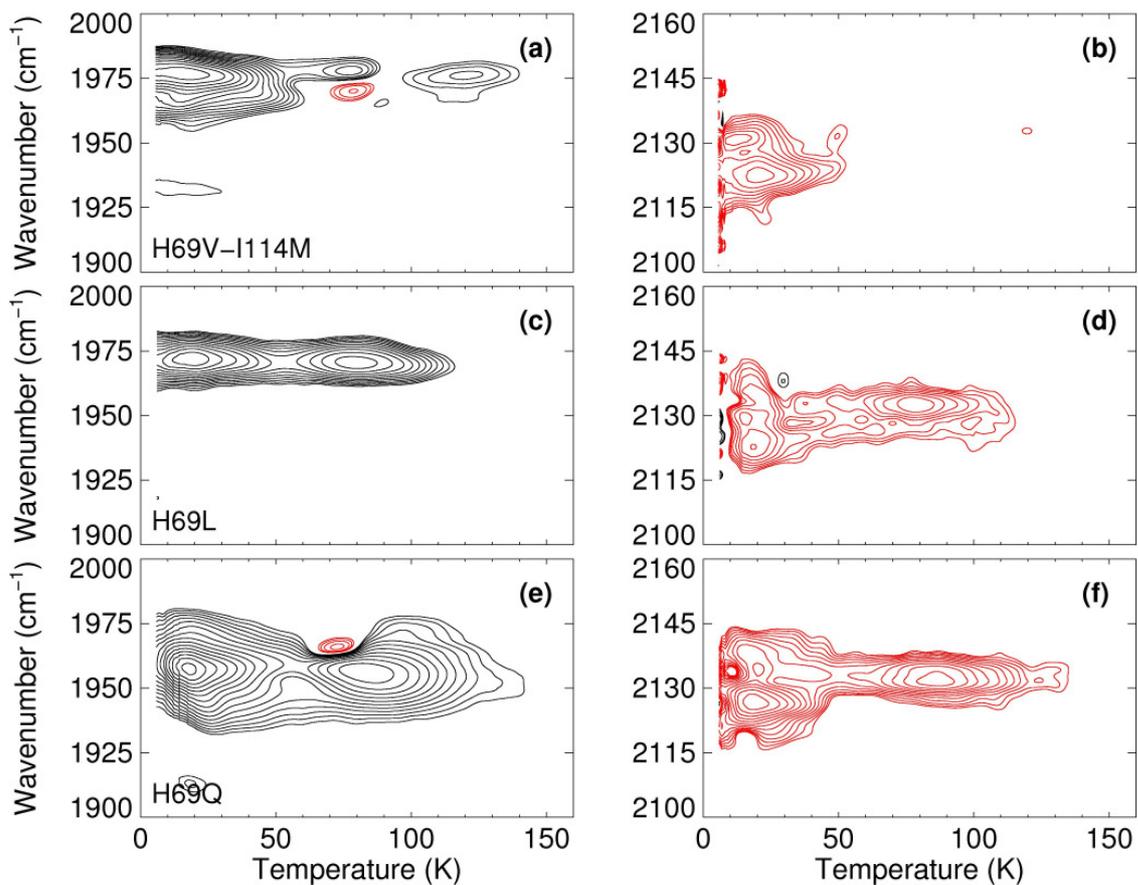
Supporting Figure 1: TDS contour maps of wild-type and mutant HbICO samples. Data were taken after 1-s illumination at 4 K. Left column: Absorption changes in the bands of heme-bound CO. Right column: Absorption changes in the photoproduct bands. Contours are spaced logarithmically; black and red lines represent increasing and decreasing absorption, respectively.



Supporting Figure 2: TDS contour maps of wild-type and mutant HbICO samples. Data were taken after slow cooling from 160 to 4 K under continuous illumination. Left column: Absorption changes in the bands of heme-bound CO. Right column: Absorption changes in the photoproduct bands. Contours are spaced logarithmically; black and red lines represent increasing and decreasing absorption, respectively.



Supporting Figure 3: TDS contour maps of mutant HbICO samples. Data were taken after 1-s illumination at 4 K. Left column: Absorption changes in the bands of heme-bound CO. Right column: Absorption changes in the photoproduct bands. Contours are spaced logarithmically; black and red lines represent increasing and decreasing absorption, respectively.



Supporting Figure 4: TDS contour maps of mutant Hb1CO samples. Data were taken after slow cooling from 160 to 4 K under continuous illumination. Left column: Absorption changes in the bands of heme-bound CO. Right column: Absorption changes in the photoproduct bands. Contours are spaced logarithmically; black and red lines represent increasing and decreasing absorption, respectively.